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ON THE PROTEIN FORMING FUNCTIONS OF THE LIVER

-USSR-

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FOREWORD

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EFFECT OF THE APPLICATION OF PROTEIN HYDROLYSATES
ON THE PROTEIN FORMING FUNCTIONS OF THE LIVER

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[Following is the translation of an article by O. M. Nuryyev in Zdravookhraneniye Turkmenistana, Vol 4, No 5, Sept-Oct 1960, pages 17-19].

(From the Chair of General Surgery; Head, Prof N. M. Tachmuradov.)

The liver, as a vital organ performs various functions. In particular, it participates in the metabolism of carbohydrates, fats, proteins and pigments.

Clinicians have long ago observed the effect of different diseases on the functions of the liver. Changes in the protein forming functions is observed both in diseases of the liver and other organs. For example, in diabetes (V. Mikhel'son, 1943; M. M. Gubernits, 1934), and in diseases of the stomach and duodenum (S. N. Savchenko, and others, 1954), and during different stages of hypoproteinemia (P. M. Al'pern and others, 1951; N. Ismailov and others 1941).

In spite of the abundant literature devoted to changes in the functions of the liver during various pathological states, many aspects of this problem, in particular, that of the protein-forming function, have, to this time, not been sufficiently studied. The restoration of the protein component of the blood after serious operations largely depends, on the protein forming function of the liver. At the present time many surgeons consider the testing of liver function to be indispensable for selecting the type of anesthesia, with the aim of preventing any possible complications etc. (I. T. Rufanov, 1944; D. N. Okun', 1950, and others).

In considering the importance of this problem, we conducted work in which we attempted to clarify the change in the protein forming functions of the liver during various pathological states of the organism, and to establish the effect of the parenteral administration of protein hydrolysates.

For determining the functional capacity of the liver, we used the Takata-Ara reaction, which is the most suitable and precise.

Among the examined, there were 43 patients with disease of the stomach, duodenum, intestine, 29 with peritonitis, and intestinal obstruction; 19 with burns, 14 with diseases of organs in the thoracic cavity, and 36 with disease of the liver, of the thyroid glands, of the rectum and etc.

The Takata-Ara reaction was determined in 141 patients at the time of admission to the clinic, and at the time of discharge from the clinic. 92 of them received protein hydrolysates parenterally (hydrolysine L-103 amineopeptide-2). As a control, 15 donors were examined from the blood transfusion station, who had a negative Takata-Ara reaction (see table).

Results of the Takata-Ara Reaction

| Groups | Total No. of patients | of these patients | During Admission | | | | | | During Discharge | | | |
|--|-----------------------|-------------------|-------------------------|-----------------|------------------|-----------------|-------------------------|-----------------|------------------|-----------------|------------------|-----------------|
| | | | Negative & Questionable | | Clearly Positive | | Negative & Questionable | | Positive | | Clearly Positive | |
| | | | Received | Did not receive | Received | Did not receive | Received | Did not receive | Received | Did not receive | Received | Did not receive |
| Control | 15 | - | - | 15 | - | - | - | - | - | - | - | - |
| Diseases of the Esophagus | 43 | 37 | 15 | 5 | 11 | 1 | 29 | 1 | 4 | 3 | 4 | 2 |
| Stomach and duodenum | 29 | 17 | 4 | 3 | 4 | 4 | 15 | 3 | 2 | 7 | - | 2 |
| Peritonitis and intestinal obstruction | 14 | 8 | 3 | 4 | 2 | - | 8 | 2 | - | 3 | - | 1 |
| Disease of organs of thoracic cavity | 19 | 11 | 6 | 8 | 3 | - | 10 | 7 | 1 | 1 | - | - |
| Burns | 36 | 19 | 9 | 12 | 4 | 3 | 17 | 12 | 1 | 4 | 1 | 1 |
| Other diseases | | | | | | | | | | | | |

As is seen in the table, the protein forming function of the liver was disrupted before admission in a significant number of patients (72 out of 141); this was particularly apparent in those with disease of the stomach and duodenum, as well as peritoneum and intestinal obstruction.

Normalization of liver function was observed only in those who were injected with protein hydrolysates, for example, out of 55 such patients there was a positive Takata-Ara reaction in 13 of the patients just prior to discharge.

Out of the group of patients who did not receive the protein preparation, the number of disturbances in the function of the liver increased from 17 to 24.

SUMMARY

1. The majority of surgical diseases, studied by us is accompanied by a disturbance of the protein forming functions of the liver. A pronounced disturbance was observed after resection of the stomach, during peritonitis, intestinal obstruction, liver abscess, burns with extensive lesions, etc.
2. The administration of protein hydrolysates (hydrolysine L-103 and ameno-peptide-2) contributes to the rapid normalization of the protein forming function of the liver.